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Columbia, SC 29201-1708

SUBJ: Evaluation of Southern Wood Piedmont status under the RCRIS Corrective Action  
Environmental Indicator Event Code (CA725)  
EPA I.D. Number SCD 049 690 001

DATE: August 20, 2004

FROM: Joe B. Bowers, P.G., Manager *JB*  
RCRA Hydrogeology II Section  
Division of Hydrogeology  
Bureau of Land and Waste Management

THRU: Ken Taylor, P.G., Director *K/T 8/20/04*  
Division of Hydrogeology  
Bureau of Land and Waste Management

TO: Project File  
Southern Wood Piedmont (SWP)  
SCD 049 690 001

## I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of Southern Wood Piedmont's (SWP) status in relation to the Current Human Exposures Under Control (CA725) corrective action event code defined in the Resource Conservation and Recovery Act Information system (RCRAInfo). Evaluation of the Migration of Contaminated Groundwater Under Control (CA750) is scheduled to be completed by September 2005.

Concurrence by the Director of the Division of Hydrogeology is required prior to entering the event code into RCRAInfo. Please sign this memorandum at the appropriate location in Attachment 1 (Current Human Exposures Under Control) to indicate your approval with its interpretations.

## **II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS**

This is the second Environmental Indicator (EI) evaluation for Southern Wood Piedmont. The previous EI evaluation for Southern Wood Piedmont was prepared by EPA Region IV and is dated September 29, 1998. Southern Wood Piedmont received a “NO” determination in both the Human Exposures Under Control (CA725) and Groundwater Releases Under Control (CA750) evaluations. For the CA725 evaluation, potential human exposures to contamination was possible due to ingestion of fish and by dermal contact with stream sediments from Standing Stone Branch. For Groundwater Releases Under Control, the evaluation found that the existing groundwater extraction system did not control the migration of contaminated groundwater, and therefore, a “NO” determination was made with respect to migration of contaminated groundwater at the SWP site.

The following references were used in the preparation of this evaluation:

- 2003 Annual Ground-Water Quality Assessment Report, dated February 26, 2004
- 2002 Annual Ground-Water Quality Assessment Report, dated February 27, 2003
- 2001 Annual Ground-Water Quality Assessment Report, dated February 22, 2002
- RCRA Part B Post-Closure Permit Renewal Application, dated February 4, 2004
- Report of Ivey Drainage Feature Investigations, dated June 15, 2001
- Ground-Water Assessment of Standing Stone Branch, dated November 1991
- Review of Risk Assessment of Standing Stone Branch (Memorandum from DuBois to Bergstrand, April 30, 2004)
- Risk Assessment for Standing Stone Branch, dated October 8, 1992
- Risk Assessment of Standing Stone Branch, dated November 1989

## **III. FACILITY SUMMARY**

SWP operated a wood treating plant in Spartanburg, S.C. beginning in 1923 until 1988 when operations ceased. The plant treated wood using both oil-based (creosote and pentachlorophenol) and acid-based (chromium, copper, arsenic) processes. Polynuclear aromatic hydrocarbons, volatile organic compounds, chromium, copper and arsenic are the main contaminants found at the site. Contamination has been found in the soil, groundwater, and stream sediments. The site is closed. SWP has submitted a RCRA Part B Permit Application for post closure care of the property, which is under review by the Department.

Since the last EI was completed, SWP completed a significant property purchase in 2001 of the Ivey property along the northern portion of the site. This purchase brought under the control of SWP the Ivey Drainage Feature, as discussed later in this EI evaluation.

#### **IV. CONCLUSION FOR CA725**

Based on review of existing data, groundwater, surface soils, and subsurface soils are contaminated at the SWP Spartanburg site above levels of regulatory concern. However, there are no complete pathways between the contamination and human receptors. Therefore, it is recommended that a "YE" status code be entered into RCRAInfo for the CA725 (Human Exposures Under Control) determination.

#### **V. CONCLUSION FOR CA750**

This memorandum does not evaluate the Migration of Contaminated Groundwater Under Control (CA750) corrective action event code. This evaluation is scheduled to be completed by September 2005.

#### **VI. SUMMARY OF FOLLOW-UP ACTIONS**

The Department is working with SWP toward renewing the RCRA Post Closure Care Permit. Once the permit is renewed, efforts will be taken toward remediation of all contamination at the site through a RCRA corrective measures study, or other similar mechanism. In addition, there is uncertainty with respect to whether previous sampling of sediments and surface water in Standing Stone Branch represents current conditions. As a result, the Department will request that SWP conduct periodic sampling of Standing Stone Branch to confirm the previous results.

Attachment: CA725: Current Human Exposures Under Control

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**ATTACHMENT 1**

**DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION  
RCRA Corrective Action**

**Facility Name:** Southern Wood Piedmont  
**Facility Address:** P.O. Box 5447  
**Facility EPA ID #:** Spartanburg, S.C. 29304

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

  **X**   If yes - check here and continue with #2 below,

       If no - re-evaluate existing data, or

       If data are not available skip to #6 and enter "IN" (more information needed) status code.

**BACKGROUND**

**Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

**Definition of "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land - and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

**Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land - and groundwater-use conditions ONLY, and do not consider potential future land - or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

**Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “contaminated”<sup>1</sup> above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			Groundwater is contaminated at levels greater than Maximum Contaminant Levels (MCLs) or EPA Region IX Preliminary Remediation Goals (PRGs) for tap water for a number of constituents, including naphthalene, benzo(a)pyrene, fluorine, anthracene, etc.
Air (indoors) <sup>2</sup>		X		Indoor air is not reasonably suspected to be contaminated above appropriate risk-based levels.
Surface Soil (e.g., <2 ft)	X			Surface soil contamination at concentrations greater than appropriate risk-based levels has been documented in the Ivey Drainage Feature.
Surface Water		X		Surface water is not reasonably suspected to be contaminated above risk-based levels.
Sediment	X			Sediment contamination has been documented in the Ivey Drainage Feature and in Standing Stone Branch. The levels detected in Standing Stone Branch are below risk-based levels, while the levels observed in the Ivey Drainage Feature are greater than relevant risk-based levels.

<sup>1</sup> “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

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Media	Yes	No	?	Rationale/Key Contaminants
Subsurface Soil (e.g., >2 ft)	X			Subsurface soil is contaminated with polynuclear aromatic hydrocarbons, and other constituents at concentrations greater than appropriate regulatory levels.
Air (outdoors)		X		Outdoor air is not reasonably suspected to be contaminated at levels above appropriate risk-based levels.

\_\_\_\_\_ If no (for all media) - skip to #6, and enter "YE" status code after providing or citing appropriate "levels" and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

  **X**   If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

\_\_\_\_\_ If unknown (for any media) - skip to #6 and enter "IN" status code.

**Rationale and Reference(s):**

The risk-based levels that contaminant concentrations were compared to are US EPA Region IX Preliminary Remediation Goals (PRGs) for sediments and soils. For groundwater, the drinking water Maximum Contaminant Levels (MCLs) were used. For those constituents in groundwater that do not have MCLs, the drinking water PRGs were used for comparison.

**Groundwater**

Groundwater is contaminated at the site with polynuclear aromatic hydrocarbons, volatile organic compounds, chromium, copper and arsenic at concentrations greater than MCLs or drinking water PRGs. Free-phased creosote is present in several wells at the site. Furthermore, naphthalene was detected at 3,300 ug/l in monitoring well MW-10 in January 2004. The drinking water PRG for naphthalene is 6.2 ug/l. Therefore, groundwater is contaminated at concentrations greater than appropriate risk-based levels.

**Indoor Air**

There is one remaining building at the SWP site that is occupied on a routine basis; the office building. Monitoring well MW-04 is located adjacent to this building. Volatile organic chemicals (VOCs) are the most likely constituents to volatilize and therefore adversely impact indoor air. No VOCs have been detected in groundwater samples collected from monitoring well MW-04 in the last five years of data reviewed. Therefore, indoor air is not reasonably expected to be contaminated above appropriate risk-based levels.

**Surface Soil and Sediment**

SWP has excavated contaminated soil from several areas across the site. These removal actions are documented in Section 2.2 (Solid Waste Management Units) of the RCRA Part B Post-Closure Permit Renewal Application, dated February 4, 2004. Contaminated surface soil was removed to the extent of "visual contamination" and these areas filled with clean soil. There is no analytical data to determine if the remaining surface soil at the site contains concentrations of hazardous constituents greater than appropriate risk-based levels.

Two drainage features are present at the SWP site. Standing Stone Branch, a small tributary to Lawson's

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Fork Creek, is located on the northeastern portion of the property. The second drainage feature is referred to as the Ivey Drainage Feature and is located near the northern portion of the property. The Ivey Drainage Feature is an ephemeral stream. Sediment and surface water contamination has been assessed in both of these features.

Except for the Ivey Drainage Feature, it appears that contaminated surface soil has been excavated at the site. For this evaluation, and specifically with respect to the Ivey Drainage Feature, surface soils and sediments have been considered to be one and the same media. This is due to the ephemeral nature of the Ivey Drainage Feature and the amount of time (<50%) during which the sediments are inundated.

Sediment samples were collected from Standing Stone Branch in 1989, 1990, and 1991. Polycyclic Aromatic Hydrocarbons (PAHs) and chromium, copper and arsenic were detected in the sediment samples collected from Standing Stone Branch, although at concentrations below relevant risk-based levels (Interim Sediment Quality Criteria values). Furthermore, a review of the Risk Assessment for Standing Stone Branch, dated October 1992 was conducted by the Department's risk assessor (see memorandum from DuBois to Bergstrand, dated April 30, 2004). This review concluded that there doesn't appear to be a significant or unacceptable risk to off-site receptors exposed to the levels of contaminants found in Standing Stone Branch.

For the Ivey Drainage Feature, surface soil and sediment samples were collected over a period of several years beginning in 1989 and continuing until 2000. The primary constituents of concern are chromium, copper and arsenic. Concentrations of copper in the soil and sediment samples did not exceed EPA Region IX residential Preliminary Remediation Goals (PRGs), while the relevant PRGs for chromium and arsenic were exceeded. The Region IX PRG for copper in soil is 3,100 mg/kg (residential), while for chromium (total) it is 210 mg/kg (residential). For arsenic, the PRG in soil ranges from 22 mg/kg for a non-cancer endpoint in a residential setting, to 0.30 mg/kg for a cancer endpoint in a residential setting. Arsenic ranges in concentrations from being non-detectable to a maximum value of 3,300 mg/kg. Typical concentrations of arsenic detected in soils and sediments in the Ivey Drainage Feature range from the low tens of mg/kg to approximately 500 mg/kg. With respect to chromium, concentrations range from non-detections to 3,000 mg/kg. Typical concentrations of chromium in the soils and sediments of the Ivey Drainage Feature range from the low tens of mg/kg to approximately 700 mg/kg.

As a result, surface soils/sediments at the site are contaminated at concentrations greater than applicable risk-based standards.

Surface Water

Surface water and sediment samples were collected from Standing Stone Branch in 1989, 1990, and 1991. In summary, surface water samples did not contain significant concentrations of hazardous constituents. In addition, the Risk Assessment for Standing Stone Branch, dated October 8, 1992, concluded that due to the intermittent nature of this stream and the fact that no fish greater than five inches in length were observed in this section of Standing Stone Branch, the ingestion of fish would be an unlikely exposure scenario. Furthermore, as noted above, a recent review of available risk assessment data for Standing Stone Branch concluded that there doesn't appear to be a significant or unacceptable risk to off-site receptors exposed to the levels of contaminants found in Standing Stone Branch. Therefore, surface water is not reasonably suspected to be contaminated above risk-based levels.

Surface water samples collected from the Ivey Drainage Feature during the period of 1990 to March 2002 have resulted in detections of contaminants. However, none of the detections in surface water are greater than appropriate risk-based levels.

Subsurface Soil

For subsurface soils, contamination is likely greater than appropriate risk-based levels. Contaminated surface soils were removed at a number of locations at the site. The criteria to which the removal of

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contaminated surface soil was conducted was to levels at which “visual” contamination was no longer visible. It is likely that subsurface contamination remains in place at concentrations greater than appropriate Soil Screening Levels (SSLs). Therefore, it is likely that contamination levels in subsurface soil remain at the site above appropriate risk-based levels.



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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land - and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table Potential <b>Human Receptors</b> (Under Current Conditions)							
<b>“Contami- nated” Media</b>	<b>Residents</b>	<b>Workers</b>	<b>Day- Care</b>	<b>Construction</b>	<b>Trespassers</b>	<b>Recreation</b>	<b>Food<sup>3</sup></b>
Groundwater	No	No	No	No	No	No	No
Air (indoors)	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Soil (surface, e.g., <2 ft)	No	No	No	No	Yes	No	No
Surface Water	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Sediment	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Soil (subsurface, e.g., >2 ft)	No	No	No	No	No	No	No
Air (outdoors)	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

Instructions for Summary Exposure Pathway Evaluation Table:

1. For Media which are not “contaminated” as identified in #2, please strike-out specific Media, including Human Receptors =spaces, or enter “N/C” for not contaminated.
2. Enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have assigned spaces in the above table. While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

\_\_\_\_\_ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter “YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

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contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

- X   If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.
- If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code

**Rationale and References(s):**

Groundwater

Groundwater at the site is currently not used for production or consumption and the site is closed. Therefore, there is no plausible current human exposure to the contaminated groundwater.

Surface Soil

Surface soil is contaminated at concentrations greater than relevant risk-based levels in the Ivey Drainage Feature area. This area is located on property owned by SWP, however access to the area is available to trespassers since it is not restricted. Therefore, it is possible for trespassers to be exposed to these contaminated soils, although this exposure is not expected to be significant due to limited duration.

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- 4 Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**<sup>4</sup> (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

- X**     If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant”.
- If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant”.
- If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

**Rationale and Reference(s):**

Due to the likely duration of the length of exposure of a trespasser, it is likely such exposure is not significant.

- 5 Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?
- If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).
- If no (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.

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<sup>4</sup> If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

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\_\_\_\_\_ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code

Rationale and Reference(s): \_\_\_\_\_

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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

  X   YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **Southern Wood Piedmont** facility, EPA ID # **SCD 049 690 001**, located at **591 Springfield Road in Spartanburg, S.C.** under current and reasonably expected conditions. This determination will be re-evaluated when SC DHEC becomes aware of significant changes at the facility.

       NO - "Current Human Exposures" are NOT "Under Control"

       IN - More information is needed to make a determination.

Completed by (signature) Joe B. Bowers Date 8-20-04  
                                   (print) Joe B. Bowers  
                                   (title) Manager, RCRA Hydrogeology II Section

Supervisor (signature) G. Kendall Taylor Date 8-20-04  
                                   (print) G. KENDALL TAYLOR, P.G.  
                                   (title) Director, Div. of Hydrogeology  
                                   (EPA Region or State) SC

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Locations where References may be found:

S.C. Department of Health and Environmental Control  
 Bureau of Land and Waste Management  
 8911 Farrow Road  
 Columbia, S.C.

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**FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.**